

Maximum Permissible Exposure Evaluation

FCC ID: 2BVDA-BI-M-B-PRO

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b).

EUT Specification

Product Name:	BLE IAQ Monitor
Trade Mark:	Birdie
Model/Type Reference:	BI-M-B-PRO
Listed Model(s):	BI-M-B-PRO-Oak, BI-M-B-PRO-Walnut
Model Differences:	Above models are identical in schematic, PCB layout, components and enclosure. The only difference is the decorative bird figure on top of the device, which contains no electronics. On BI-M-B-PRO the bird is made of plastic with the wings joined by a small screw. On BI-M-B-PRO-Oak and BI-M-B-PRO-Walnut the bird is made of oak or walnut wood with the wings joined by a wooden dowel and glue, and contains no metal parts. As the bird has no electrical function and the wooden versions add no metal, the tests were performed on the model BI-M-B-PRO.
Frequency Band (Operating)	BLE: 2402MHz ~ 2480MHz
Device Category	☐ Portable (<5mm separation) ☐ Mobile (>20cm separation) ☒ Fixed (>20cm separation) ☐ Others ____
Exposure Classification	☐ Occupational/Controlled exposure (S=5mW/cm ²) ☒ General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna Diversity	☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Antenna Gain (Max)	BLE: 1.5dBi
Evaluation Applied	☒ MPE Evaluation ☐ SAR Evaluation

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
(A) Limits for Occupational/Controlled Exposure				
300-1500	--	--	F/300	<6
1500-100000	--	--	5	<6
(B) Limits for General Population/Uncontrolled Exposure				
300-1500	--	--	F/1500	<30
1500-100000	--	--	1	<30

Calculation Method

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where:

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d limit of MPE is 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Measurement Result

Mode	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Max. Tune Up Power (dBm)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
BLE	2402	1.5	-0.6	0	0.0003	1

Note:

1. Calculate in the worst-case mode.
2. Max. Tune Up Power is declared by manufacturer, and used to calculate.
3. For a more detailed features description, please refer to the RF Test Report.

*****THE END*****